

5 th Semester	RCH5D001	ADVANCED SEPARATION TECHNOLOGY	L-T-P 3-0-0	3 CREDITS
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Module I: (12 hr)

Rate governed processes, definitions and terminologies. Membranes: Types and modules, classification of membrane processes, membranematerials, advantages and disadvantages of membrane processes, major areas of application, preparation and characterization of membranes.

Module II: (8 hr)

Principles, advantages, disadvantages, and applications of reverse osmosis, nano-filtration, ultra-filtration, and micro-filtration.

Module III: (10 hr)

Principles, advantages, disadvantages, and applications of dialysis, gas separation, pervaporation, electrodialysis, and liquid membranes.

Module IV: (6 hr)

Facilitated transport, recent advances in membrane processes, and biomedical applications of membranes.

Book:

1. Membrane Separation Processes by K Nath, PHI.
2. Perry's Chemical Engineers' Handbook, 8th ed. by D W Green and R H Perry, McGraw-Hill.
3. Separation Processes, 2nd ed. by C J King, Dover Publications.
4. Handbook of Separation Process by R W Rousseau, Wiley.
5. Principles of Mass Transfer and Separation Processes by B K Dutta, PHI.
6. Transport Processes and Separation Process Principles, 4th ed. by C J Geankoplis, Pearson.
7. Separation Process Principles, 2nd ed. by J D Seader and E J Henley, Wiley.

Digital learning resources:

1. Novel Separation Processes by Prof. S. De, Department of Chemical Engineering, IIT Kharagpur (Link: <https://nptel.ac.in/courses/103/105/103105060/>)